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ABSTRACT

Typically, neuropsychological assessment has been used to predict various diagnostic parameters. In the elderly, referrals are often made to psychologists for the purpose of facilitating diagnosis of psychiatric or organic conditions, such as depression or Alzheimer's disease. However, psychologists are routinely requested to make recommendations about patients' functional capacity for the purpose of aftercare planning. This study examined the relationship between various neuropsychological skills and ability to perform a number of instrumental daily living tasks in a sample of 98 elderly inpatients of a geriatric psychiatry ward. When activities of daily living (ADL) items were grouped according to categories of personal self-care, mobility, and independent self-care, significant relationships were noted between cognitive-based ADL functions and neuropsychological test performance. Results suggest the potential utility of neuropsychological tests for prediction of functional outcome and for examining models of neuropsychological skills required for various daily living requirements. Results also suggest that neuropsychological test performance is unlikely to be useful in predicting basic self-care and mobility functions. These findings may be of value in future research designed to evaluate the predictive efficacy of clinical neuropsychological evaluations in determining functional outcomes with hospitalized elderly patients. (Author/ABL)

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THE RELATIONSHIP OF NEUROPSYCHOLOGICAL SKILLS AND FUNCTIONAL OUTCOME IN THE ELDERLY

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ABSTRACT

In the elderly, referrals for neuropsychological assessment are often made for the purpose of facilitating diagnosis of psychiatric or organic conditions, such as depression or Alzheimer's disease. However, psychologists are routinely requested to make recommendations about patients' functional capacity for the purpose of aftercare planning. This paper presents preliminary information on the relationship between various neuropsychological skills and ability to perform a number of instrumental daily living tasks in a sample of 98 elderly inpatients of a geriatric psychiatry ward. These findings may be of value in future research designed to evaluate the predictive efficacy of clinical neuropsychological evaluations in determining functional outcome with hospitalized elderly patients.

INTRODUCTION

Typically, neuropsychological assessment has been used to predict various diagnostic parameters. In the elderly, referrals are often made to psychologists for the purpose of facilitating diagnosis of psychiatric or organic conditions, such as depression or Alzheimer's disease. However, psychologists are routinely requested to make recommendations about patients' functional capacity for the purpose of aftercare planning.

While psychologists are often asked to respond to these questions regarding how patients will do after discharge, the data are not yet available for making an informed response. This relationship between assessment and outcome is particularly problematic in the case of the severely impaired elderly patient, who frequently does not return home or to regular employment following psychiatric hospitalization or, if returning home, requires supportive assistance. Return to employment occurs relatively rarely, and it is more often the case that a decision must be made as to whether the patient can return home with or without assistance, or go to some institutional care facility. The essential consideration here is the capacity for independent living. Major issues often involve the modifications needed in the home for the patient who return there, or the particular level of institutional care needed. The problem usually resolves to the level of self-care of which the patient is capable. In the case of the elderly psychiatric patient, self-care is often not a matter of physical limitations, such as loss of sensory or motor function, but cognitive limitations, such as impairment of memory, judgment, or communicative abilities. It is often quite difficult to determine whether a patient's functional, self-care capacities while in the hospital are sufficiently intact to plan for a return to relatively independent living. It is likewise difficult to predict the least restrictive level of care needed, if continued institutionalization is indicated. The difficulties sometimes make for inappropriate types of placement, particularly in those instances in which patients are sent to nursing homes who need not be there on the basis of limitations of self-care capacities.

The nature of functional activities of daily living (ADL) is such that any content area generally involves several cognitive, perceptual, and motor requirements. This multi-ability nature of most everyday activities makes it necessary to develop some model for relating those activities to level and pattern of cognitive, perceptual, and motor skills. Ideally, neuropsychological tests should be able to predict functional ADL deficit as well as underlying neuropsychological deficits.

This paper presents preliminary information on the relationship between various neuropsychological skills and patients' ability to perform a number of instrumental daily living tasks.

SUBJECTS

The sample consisted to 98 inpatients on the geropsychiatric unit of a University based psychiatric hospital. Subjects ranged in age from 60 to 92, with a mean age of 75.09 (SD = 7.62). There were 20 males and 78 females in the sample. Patients carried DSM-III diagnoses of either Dementia, one of the Major Affective Disorders, or both Dementia and

Affective disorders. Education levels ranged from 3 years to 18 years (Mean = 10.2; SD = 3.15).

METHOD

All patients were administered an abbreviated version of the Luria-Nebraska Neuropsychological Battery (LNNB), developed for assessment of the elderly (McCue, Shelly and Goldstein, 1985). Patients were also administered a functional assessment protocol by an occupational therapist. Patients were observed and rated as either independent or dependent on a number of self-care tasks (Figure 1). All items were administered to patients in a standardized manner. Data analysis involved computing Pearson correlation coefficients between the major LNNB scales and the ADL performance dimensions. Regression equations were also computed to determine the best set of neuropsychological predictors of the ADL ratings.

RESULTS AND DISCUSSION

The results of the correlational analyses between neuropsychological scores and individual instrumental self-care items are presented in Table 1. Correlations varied according to the LNNB scale and the level of the ADL dimension measured. For example, a correlation of .55 ($p < .001$) was observed between balancing a checkbook and the LNNB Memory scale, whereas, a correlation of .01 was obtained between making a bed and the LNNB Reading scale. When ADL items are grouped according to categories of personal self-care (e.g. bathing, toileting), mobility (e.g. negotiating stairs), and independent self-care (e.g. using the telephone, managing medications), significant relationships were noted between cognitive-based ADL functions and neuropsychological test performance (Table 2). Multiple correlations between the grouped variables and neuropsychological test scores were in the .70 range for independent self-care items while in the .30 range for personal self-care and mobility ADL items (Table 3). The number of highly significant correlations obtained between measures of neuropsychological skill and the ability to perform instrumental daily living functions suggest the potential utility of neuropsychological tests for prediction of functional outcome and for examining models of neuropsychological skills required for various daily living requirements. Results also suggest, as anticipated, that neuropsychological test performance is unlikely to be useful in predicting basic self-care and mobility functions. These findings may be of value in future research designed to evaluate the predictive efficacy of clinical neuropsychological evaluations in determining functional outcome with hospitalized elderly patients.

REFERENCE

McCue, M., Shelly, C., Goldstein, G. (1985). A proposed short form of the Luria-Nebraska Neuropsychological Battery oriented toward assessment of the elderly. International Journal of Clinical Neuropsychology 7(2):96-101.

TABLE 1

CORRELATIONS BETWEEN THE LNNB-S MAJOR SCALES AND ADL RATINGS

	Motor	Tactile	Visual	Recept	Express	Writing	Reading	Arith	Memo	IQ	Path
Dressing	.36**	.29**	.32*	.43**	.46**	.25*	.26	.30**	.45**	.47**	.41**
Cooking	.35**	.31*	.35**	.36**	.33*	.18	.13	.25	.41**	.40**	.31*
Washing Dishes	.31*	.26	.31*	.18	.22	.19	.05	.25	.26	.24	.23
Making Bed	.40**	.32*	.39**	.30*	.23	.16	.01	.09	.30*	.27*	.29*
Washing Clothes	.39**	.39**	.27	.26	.17	.15	.04	.19	.31*	.25	.29**
Vacuuming	.34*	.41**	.15	.18	.13	.16	.04	.07	.32*	.24	.29*
Sewing	.25	.39**	.12	.28	.27	.18	.13	.16	.33*	.27	.27
Making Purchases	.37**	.24	.38**	.52**	.36**	.28*	.35*	.33*	.49**	.52**	.34*
Writing Checks	.30**	.34*	.32*	.45*	.36*	.38**	.32*	.38**	.55**	.50**	.41**
Balancing Checkbook	.38**	.34*	.32*	.45**	.36*	.38**	.32*	.38**	.55**	.50**	.41**
Answer Mail	.48**	.44**	.32*	.39**	.38**	.39**	.40**	.36**	.47**	.46**	.47**
Manage Medication	.45**	.45**	.36**	.40**	.32*	.26	.24	.36**	.47**	.45**	.38**
Emergency Response	.44**	.36**	.26	.36**	.26	.26	.16	.30*	.37**	.35**	.33*

* $p < .01$
** $p < .001$

TABLE 2

CORRELATIONS BETWEEN ADL MEASURES AND NEUROPSYCHOLOGICAL RATINGS

	Motor	Tactile	Visual	Receptive	Expressive	Writing	Reading	Arithmetic	Memory	IQ
PERSONAL SELF CARE (PSC) (n=95)	.37**	.24**	.22	.23	.25*	.23	.23	.17	.27*	.24*
MOBILITY (n=94)	.28*	.27*	.13	.18	.15	.17	.06	.03	.14	.14
INDEPENDENT SELF CARE (ISC) (n=58)	.55**	.47**	.45**	.50**	.43**	.36*	.32*	.35*	.60**	.55**
PHYSICAL ISC (n=67)	.42**	.41**	.36**	.30*	.22	.19	.04	.16	.37**	.33*
COGNITIVE ISC (n=59)	.50**	.43**	.42**	.53**	.47**	.37*	.39**	.39**	.61**	.58**

NOTE: Neuropsychological test scores have been reflected in this matrix so that higher scores indicate more superior performance.

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* $p < .01$
** $p < .001$

TABLE 3

MULTIPLE CORRELATIONS COEFFICIENTS

	Multiple R	R Square
Personal Self Care (PSC) (n=95)	.39	.15
Mobility (n=94)	.36	.13
Independent Self Care (ISC) (n=58)	.73	.54
Physical ISC* (n=67)	.74	.41
Cognitive ISC* (n=59)	.70	.49

*Physical ISC and Cognitive ISC are subsets of independent self-care

FIGURE 1

Personal Self Care (PSC)

- Dressing
- Hygiene (Brushing Teeth, Combing Hair, Cutting Fingernails and Toenails)
- Washing and Bathing
- Mobility

Independent Self Care (ISC)

- Using the telephone to obtain information **
- Cooking pudding using the range **
- Wasing dishes *
- Making a bed *
- Wasing clothes *
- Cleaning a soiled floor using a vacuum *
- Sewing a button **
- Interpreting a utility bill and writing a check **
- Balancing a checkbook **
- Preparing the envelope for mailing a check **
- Managing medications **
- Verbalizing an appropriate response to hazardous situations, such as an electrical cord dropped near a water faucet **

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* denotes "Physical" ISC ** denotes "Cognitive" ISC